

Appl. No. 09/956,954
Amdt. dated July 1, 2005
Reply to Office Action of March 21, 2005

Remarks

This preliminary amendment is made in the RCE with which it is filed. That RCE requests entry of the previously filed Amendment After Final. The preliminary amendment further responds to the final Official Action dated March 21, 2005 and the Advisory Action dated June 8, 2005. A petition for a one month extension of time to respond and authorization to charge Deposit Account No. 50-1058 the large entity extension fee of \$120 accompany this amendment. A telephone interview with the Examiner was held on May 12, 2005 and a phone message from the Examiner was left on Dr. Pechanek's phone on May 13, 2005. Claims 2-21 were rejected under 35 U.S.C. § 102 as being anticipated by Matt et al. U.S. Patent No. 5,909,489 (Matt). This ground of rejection is addressed below as is Sjöberg et al. U.S. Patent No. 5,907,823 (Sjöberg) which the Examiner noted in the phone message.

Claims 4, 5, 7, 9-11, 16, 21, and 22 have been amended to be more clear and distinct. New claims 23-30 have been added. Claims 2-30 are presently pending.

Interview Summary

The Examiner is thanked for the courtesy of a telephone interview with Peter Priest and Dr. Pechanek on May 12, 2005 concerning the above case. The art was discussed but no agreement was reached.

The Examiner is further thanked for the telephone message left on Dr. Pechanek's phone on May 13, 2005 concerning the above case. In the May 13, 2005 phone message, the Examiner indicated that he had found new art, Sjöberg et al. U.S. Patent No. 5,907,823 (Sjöberg).

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The Art Rejections

The Examiner rejected Claims 2-21 under 35 U.S.C. 102 as being anticipated by Matt. It is clear the rejection based upon Matt is not supported by a careful reading of that reference and the rejections based thereupon should be reconsidered and withdrawn. Further, the Applicant does not acquiesce in the analysis of Matt made by the Examiner in the final Office Action and respectfully traverses the Examiner's analysis underlying its rejections.

Matt discloses a line echo suppressor circuit for a speech communication system. The near-end of Matt's communication system used by a local subscriber A includes a microphone 1.2 which, through an analog to digital converter 1.4, generates transmit path 1.3 signal $x(k)$. The near-end of Matt's communication system further includes a speaker 1.1 which is driven by a receive path 1.5 signal $y(k)$ through an analog to digital converter 1.6. Matt, col. 4, lines 43-53, col. 5, lines 13-16, and Fig. 2a (emphasis added). Matt states one of the steps of "improving transmission properties of an echo affected signal on a transmission link" is "providing, in response to said sensing of the receive path, a noise signal having a magnitude indicative of a noise level on said receive path ...". Matt, col. 2, lines 65-67 and col. 3, lines 5-7 (emphasis added). The "noise level on said receive path" is a noise level "ynlam" "which is a measure of the noise level in receive path 1.5" $y(k)$ which is received from the far end of the system. Matt, col. 6, lines 25-28.

It appears that the closest Matt comes to having a near-end noise level estimator is with the signal "xlam" provided by circuit 3.4. In the Advisory Action of June 8, 2005, the Examiner provided the following analysis, the "Examiner reads the long-term average as a 'near-end' noise

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estimate (Col 5 line 55 to Col 6 line 24)." It is inferred from the referenced sections of Matt, that the Examiner believes that the signal "xlam" is a measure of the near-end noise. Also, in the same analysis, the "Examiner reads the near end echo as 'near end noise'." As a matter of clarification, near-end noise is derived from a signal received from a source where the near-end noise is present, such as from a microphone. For example, Matt's microphone 1.2, Figs. 1 and 2a. A near echo 4.1, according to Matt is, for example, created in the first hybrid circuit 4 which is connected to the line echo suppressor 3 and "is characterized by a short, essentially constant delay time". Matt, Figs. 1 and 2a, col. 4, lines 64-67. Matt differentiates between echoes, both near echoes and far echoes, and the receive path noise level and does not treat an echo as near-end noise. Matt, col. 4, line 60 to col. 5, line 5. It is incorrect to consider 'near-end noise' and 'the near end echo' as being the same.

In the Advisory Action, the Examiner described his interpretation of a 'compression range' and the adaptive adjustment of such a range in the Matt patent. The applicant respectfully disagrees with the Examiner's interpretation of the "compression range" and the adaptive adjustment of such range. Thus, while the claims of the present invention have been amended to address additional novel aspects, the applicant does not acquiesce in the analysis of Matt by the Examiner.

Matt does not discuss any problems associated with having an inaccurate indication of the near-end noise. Rather, Matt describes the ambient noise as being "generally uniform" and is silent with regards to the precision of any noise estimate representing the ambient noise. Matt, col. 6, lines 17-20.

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In contrast, the present invention recognizes that a noise level measured on a signal from a source, such as a microphone with unknown noise sensitivity, may be inaccurate and for a microphone with an unknown noise sensitivity "the sound pressure level at a given handset can no longer be derived from an electrical signal level". See, for example, paragraph [0060] of the present invention. The present invention accounts for this imprecision in the noise level estimate. As presently claimed in claim 21, "a noise adaptive gain controller for generating a noise adaptive gain G_N that is a function of the near-end noise estimate and a noise sensitivity coefficient, the noise sensitivity coefficient is set to a variable value to account for variability in the near-end noise level estimate resulting from imprecise measurement of the near-end noise ". See, for example, paragraphs [0065] and [0066] of the present invention.

Nothing in Matt teaches or makes obvious an apparatus or method as presently claimed which addresses the problems of adaptive noise compensation of signals utilizing an imprecise measure of the near-end noise as presently claimed. As an example, some microphones may be designed to pick up less noise from the side. Analysis of the signals produced by such microphones will generate underestimates of actual noise levels when the microphone is held by a user so that the noise is predominately from the side or when a noise source moves to be from the side. As another example, sensitivity may differ significantly from microphone to microphone. If noise compensation is realized in a network, the noise related sound pressure level at a given handset may be variably imprecisely measured by measuring the electric signal level in the network. See, for example, paragraph [0060] of the present invention. The ability to address such variability is in contrast with Matt where if the long-time average magnitude signal

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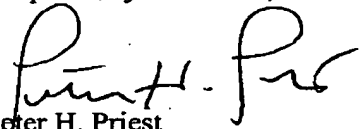
xlam provides an imprecise measure of near-end noise, then, for example, the generation of the coupling estimator 3.6 output dll, the coupling signal thrs, and the speech signal S will all be inaccurate and not responsive to the actual ambient noise. Matt does not recognize this problem and treats the "ambient noise" as "generally more uniform" and is silent with regards to the precision of noise measurements. Matt, col. 6, lines 1-24. The claims are not taught, are not inherent, and are not obvious in light of Matt.

With regard to Sjöberg, no detailed guidance is provided by this patent with regard to the adjusting mechanism used for adjusting an audio signal. Further, Sjöberg does not recognize the problems associated with having an inaccurate representation of ambient noise, nor how to deal with such problems as presently claimed. Consequently, Sjöberg does not teach and does not make obvious the claims as presently amended.

Conclusion

All of the presently pending claims, as previously amended, appearing to define over the applied references, withdrawal of the present rejection and prompt allowance are requested.

Respectfully submitted,



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